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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/765,955	01/29/2004	Yukio Michishita	00USFP606M.K. DIV	2335

21254 7590 12/13/2005

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EXAMINER

TRAN, DZUNG D

ART UNIT PAPER NUMBER

2638

DATE MAILED: 12/13/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/765,955	<b>Applicant(s)</b> MICHISHITA, YUKIO	
	<b>Examiner</b> Dzung D Tran	<b>Art Unit</b> 2633	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on amendment filed on 09/26/2005.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 9-16 and 20-37 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 9-11, 14-16 and 20-35 is/are rejected.
- 7) ☒ Claim(s) 12, 13, 36 and 37 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Drawings*

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the “first wavelength dispersion compensator comprises an input coupled to said optical splitter/combiner, and said second wavelength dispersion compensator comprises an output coupled to said optical splitter/combiner” in claim 36 and “first and second wavelength dispersion compensators comprises are coupled to said plurality of optical splitter/combiner, respectively” in claim 37 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either “Replacement Sheet” or “New Sheet” pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner,

the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Specification***

***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 9-11, 14-16, 20-23 and 33-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Prior Art figures 1 and 2 in view of Tomita US patent no. 6,684,004.

Regarding claims 9, 10 and 21, Prior Art figure 1 discloses an optical communication system comprising:

a first optical fiber connected to a first station 11;

a second optical fiber connected to a second station 12;

a third optical fiber connected to a third station 14; and

a light branching apparatus 13, which comprises: an optical splitter which splits an optical signal for a plurality of channels on said first optical fiber from said first station into at least a first optical channel signal on a first channel of said second

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optical fiber and a plurality of second optical channel signals on a plurality of second channels of said third optical fiber (Prior Art figure 2).

Prior Art figures 1 and 2 differs from claim 9 of the present invention in that it does not disclose a first wavelength dispersion compensator which is provided for said first channel and compensates wavelength dispersion of said first optical channel signal due to said optical splitter.

Tomita discloses in Fig. 3, an optical system having optical splitter 6-1 which splits an optical signal for a plurality of channels on said first optical fiber (e.g., fiber that carry the WDM signal having wavelengths  $\lambda_1$  to  $\lambda_5$ ) from said first station into at least a first optical channel signal on a first channel ( $\lambda_1$ ) of said second optical fiber (e.g., fiber that carry  $\lambda_1$  to  $\lambda_5$ ) and a plurality of second optical channel signals on a plurality of second channels ( $\lambda_3$  to  $\lambda_5$ ) of said third optical fiber (e.g., fiber that carry  $\lambda_3$  to  $\lambda_5$ ) and a DCF 7-1, 7-2 at each of the output of the splitter 6-1 is designed to compensate for the accumulated loss resulting from the splitter 98 (see Fig. 3).

At the time of the invention was made, it would have been obvious to a person of ordinary skill in the art to replace optical splitter in the branching apparatus 13 with the optical splitter 6-1 having the DCF 7-1, 7-2 for compensate the wavelength dispersion due to the optical splitter taught by Tomita in the apparatus of Prior Art figures 1 and 2. One of ordinary skill in the art would have been motivated to do this in order to reduce the noise and signal interference due to optical splitter.

Regarding claim 11, Prior Art figures 1 and 2 further discloses equalizing fiber 19 is inserted on the second fiber for compensating wavelength dispersion of said first optical channel signal due to said second optical fiber (see figure 1).

Regarding claims 14-16, Prior Art figures 1 and 2 further discloses an amplifier (equivalent to another wavelength dispersion compensator) is inserted on the second fiber for compensating wavelength dispersion of said first optical channel signal due to said second optical fiber (see figure 1).

Regarding claims 22 and 23, Prior Art, figures 1 and 2 further discloses a plurality of optical amplifier formed on said transmission line between light transmitter station 11 and said light branching apparatus 13 (see figure 1).

Regarding claim 20, Prior Art figures 1 and 2 discloses an optical communication system comprising:

- a light transmitter station 11;
- a first light receiver station 12 in communication with said light transmitter station 11 via an optical light comprising a plurality of optical fibers (see Prior Art figure 1);
- a light braching apparatus 13 formed on said optical line between said light transmitter station 11 and light receiver station 12; and
- a second light receiver station 14 in communication with said light transmitter station 11 via an optical light comprising a plurality of optical fibers (see Prior Art figure 1);

Wherein a path between said light transmitter station 11 and said first light receiver station 12 comprise a main transmission path and a path between said light

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transmitter station 11 and said second light receiver station 14 comprise a sub transmission path and wherein said light branching apparatus comprises a equalization interval A to B (equivalent to a first wavelength dispersion compensation) for said main transmission path and a equalization interval A to C (equivalent to a second wavelength dispersion compensation) for said sub transmission path.

a light branching apparatus 13, which comprises: an optical splitter which splits an optical signal for a plurality of channels on said first optical fiber from said first station into at least a first optical channel signal on a first channel of said second optical fiber and a plurality of second optical channel signals on a plurality of second channels of said third optical fiber (Prior Art figure 2).

Prior Art figures 1 and 2 differs from claim 20 of the present invention in that it does not disclose a first wavelength dispersion compensator which is provided for said first channel and compensates wavelength dispersion of said first optical channel signal due to said optical splitter.

Tomita discloses in Fig. 3, an optical system having optical splitter 6-1 which splits an optical signal for a plurality of channels on said first optical fiber (e.g., fiber that carry the WDM signal having wavelengths  $\lambda_1$  to  $\lambda_5$ ) from said first station into at least a first optical channel signal on a first channel ( $\lambda_1$ ) of said second optical fiber (e.g., fiber that carry  $\lambda_1$  to  $\lambda_5$ ) and a plurality of second optical channel signals on a plurality of second channels ( $\lambda_3$  to  $\lambda_5$ ) of said third optical fiber (e.g., fiber that carry  $\lambda_3$  to  $\lambda_5$ ) and a DCF 7-1, 7-2 at each of the output of the splitter 6-1 is designed to compensate for the accumulated loss resulting from the splitter 98 (see Fig. 3).

At the time of the invention was made, it would have been obvious to a person of ordinary skill in the art to replace optical splitter in the branching apparatus 13 with the optical splitter 6-1 having the DCF 7-1, 7-2 for compensate the wavelength dispersion due to the optical splitter taught by Tomita in the apparatus of Prior Art figures 1 and 2. One of ordinary skill in the art would have been motivated to do this in order to reduce the noise and signal interference due to optical splitter.

Regarding claim 33, Tomita discloses the first wavelength dispersion compensator compensate wavelength dispersion of said first optical channel signal due to said optical signal and said second optical fiber (see Fig. 3).

Regarding claim 34, Tomita discloses in Fig. 3, a light branching 6-1 is located intermediate to said first, second and third fibers.

Regarding claim 35, Tomita discloses in Fig. 3, the first wavelength dispersion compensator comprises an input coupled to said optical splitter 6-1 and an output coupled to said second optical fiber, and second wavelength dispersion compensator comprises an input coupled to said optical splitter 6-1 and an output coupled to said third optical fiber.

4. Claims 24-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Prior Art figures 1 and 2 in view of Tomita US patent no. 6,684,004 and further in view of Okuno et al. US publication no. 2001/0000442.

Regarding claim 24, the combination of Prior Art figures 1 and 2 and Tomita does not disclose a plurality of dispersion shift fibers formed in said optical transmission line



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and a plurality of dispersion compensation fibers having a characteristic opposite to a characteristic of said dispersion shift fibers and formed between adjacent optical repeaters. Okuno discloses in figure 11, an WDM communication system having a plurality of dispersion shift fibers 22 formed in said optical transmission line and a plurality of dispersion compensation fibers 23 having a characteristic opposite to a characteristic of said dispersion shift fibers and formed between adjacent optical repeaters 20.

At the time of the invention was made, it would have been obvious to a person of ordinary skill in the art to implement the DSF and DCF fibers taught by Okuno in the apparatus of Prior Art figures 1 and 2. One of ordinary skill in the art would have been motivated to do this in order to compensate the dispersion due to the optical fiber.

Regarding claims 25-27, Prior Art figures 1 discloses a plurality dispersion compensations in a first wavelength dispersion compensation and a second wavelength dispersion compensation (e.g., plurality of amplifiers and plurality of equalizing fiber 19, see Prior Art figure 1).

Regarding claims 28-30, Prior Art figures 1 discloses the amplifiers and equalizing fiber 18, 19, 21 and 22 compensate dispersion due to the transmission path length (page 2, paragraph 0012).

Regarding claims 31 and 32, Prior Art figures 2 discloses branching unit 13 comprise a plurality of optical splitter/combiner 13B and optical switch 13A which switches a transmission path between a first transmission path and a second transmission path (page 1, paragraph 0008).

5. Claims 12 and 13 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

### ***Response to Arguments***

6. Applicant's arguments with respect to claims 9-16 and 20-37 have been considered but are moot in view of the new ground(s) of rejection.

### ***Conclusion***

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dzung D Tran whose telephone number is (571) 272-3025. The examiner can normally be reached on 9:00 AM - 7:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vanderpuye Kenneth can be reached on (571) 272-3078. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



DT

12/05/2005